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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/061,944	02/01/2002	Thomas J. Schall	019934-003210US	8775

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EXAMINER	
LE, EMILY M	

ART UNIT	PAPER NUMBER
1648	

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/061,944	SCHALL ET AL.	
	Examiner	Art Unit	
	Emily Le	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *47,48,54 and 60-63* is/are pending in the application.

4a) Of the above claim(s) *60-62* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *47-48, 54 and 63* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Claims 1-46, 49-53 and 55-59 are cancelled. Claims 47-48, 54 and 60-63 are pending. Claims 60-62 are withdrawn for being directed to a non-elected invention. Claims 47-48, 54 and 63 are under examination.

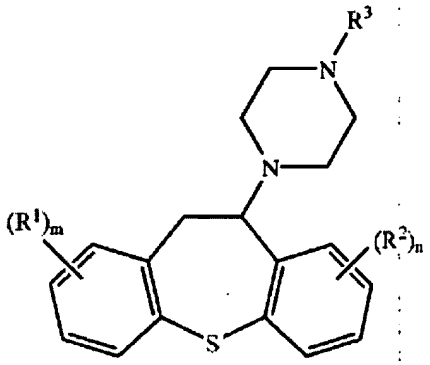
Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 47-48, 54 and 63 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claimed invention is directed to the use of a compound having the formula set forth below to bind to the US28 protein expressed on the surface of a CMV infected cell, isolating the complex, obtaining the genomic data of the virus found in the infected cell, and detecting the presence and/or absence of mutations in the cytomegalovirus by genotypically analyzing a segment to of the virus found in the infected cell.



or is a pharmaceutically acceptable salt thereof; and wherein

the subscripts m and n are independently integers of from 0 to 3;

R^1 and R^2 are substituents independently selected from the group consisting of halogen, $(C_1$-$C_4)$alkyl, $(C_1$-$C_4)$alkoxy, $(C_1$-$C_4)$alkylthio, $(C_1$-$C_4)$haloalkyl, $(C_1$-$C_4)$haloalkoxy, nitro, cyano, $(C_1$-$C_4)$acyl, amino, $(C_1$-$C_4)$alkylamino, and di$(C_1$-$C_4)$alkylamino; and

R^3 is a substituent selected from the group consisting of $(C_1$-$C_4)$alkyl, $(C_1$-$C_4)$haloalkyl and $(C_1$-$C_4)$acyl.

However, it is noted that the claims do not require the compound having the formula presented above to bind to US28 protein expressed on the surface of a CMV infected cell. In the instant, the claims require the compound to bind to CMV and/or any part of a CMV infected cell.

In the instant, the claims are directed to a genus of compounds that bind to CMV and/or any part of CMV infected cells.

To provide adequate written description and evidence of possession of **a claimed genus**, the specification must provide sufficient description of a representative number of species by i) actual reduction to practice, ii) reduction to drawings; or iii) disclosure of relevant identifying characteristics, such as disclosure of complete or partial structure,

physical and/or chemical properties, functional characteristics, correlation between structure and function, and methods of making. The analysis is as follow:

i) Sufficient description of a representative number of species by actual reduction to practice: the specification only teaches the binding of compounds having the formula provide above to the US28 protein expressed in the surface of the CMV infected cell. The specification does not teach of a single compound that binds to CMV directly, or any part of a CMV infected cell. Thus, the specification fails to provide sufficient description of a representative number of species by actual reduction to practice.

ii) Sufficient description of a representative number of species by reduction to drawings: The specification contains one drawing, Figure 1. In the instant, Figure 1 is not directed at the disclosure of compounds having the formula provided above binding to CMV or any part of a CMV infected cell. In conclusion, the drawing fails to provide a description of a representative number of species.

iii) Sufficient description of a representative number of species by disclosure of relevant identifying characteristics: The specification only teaches of compounds having the formula provided above binds to the US28 protein expressed on the surface of a CMV infected cell. Specifically, the specification teaches of two compounds, methiothepin and octoclothepin, that binds to the US28 protein expressed on the surface of a CMV infected cell. In all, the specification discloses of two compounds having the structural formula provided above as capable of binding to the US28 protein expressed on the surface of a CMV infected cell.

The specification does not teach or provide any additional compounds, those

having the structural formula as provided above, that bind to the US28 protein expressed on the surface of a CMV infected cell, CMV itself or other parts of a CMV infected cell. In the instant, the specification provides for the complete structure of compounds that bind to the US28 protein expressed on a CMV infected cell; and provides a partial structure of the compounds that are required to bind to CMV and/or other parts of a CMV infected cell, as evidenced by the structural requirements defined in the formula provided above. It is further noted that the specification notes that two compounds that are in accordance with the structural requirements set forth in the formula provided above. However, the specification does not teach of any other species of the compounds. The specification does not provide any guidance or teachings relating to binding of compounds having the structural requirements defined in the formula provided above, such as binding affinity and/or binding specificity, with CMV or other parts of a CMV infected cell. The specification does not provide any guidance relating the required function, binding to CMV and other parts of a CMV infected cell, and the structural elements necessary to accomplish the desired function. In conclusion, the specification fails to provide sufficient description of a representative number of species by disclosure of relevant identifying characteristics.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that

[he or she] invented what is claimed." (See *Vas-Cath* at page 1116). As discussed above, the disclosure only provides for a partial structure and a disputable and unsupported functional characteristic. The disclosure fails to teach a correlation between the required function, binding to CMV and other parts of a CMV infected cell, and the structural element that is necessary to achieve the required function. Ergo, in the instant, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of compounds based on the teaching from the specification. And therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

Therefore, only compounds having the structural elements required by the formula provided above, and have the ability to bind to the US28 protein expressed on the surface of a CMV infected cell, but not the full breadth of the claims meet the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

4. Claims 47-48, 54 and 63 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention.

To be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation. In Genentech *Inc. v. Novo Nordisk* 108 F.3d 1361, 1365, 42 USPQ2d 1001, 1004 (Fed. Cir. 1997); *In re Wright* 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993); See also *Amgen Inc. v. Chugai Pharm. Co.,* 927 F.2d 1200, 1212, 18 USPQ2d 1016, 1026 (Fed. Cir. 1991); *In re Fisher* 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970). Further, in *In re Wands* 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) the court stated:

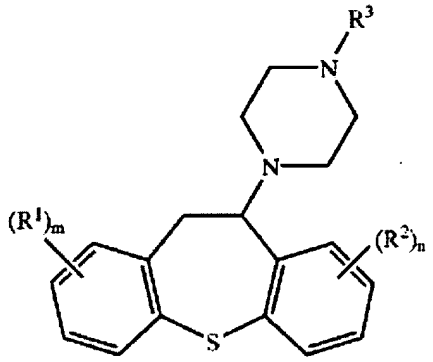
> Factors to be considered in determining whether a disclosure would require undue experimentation have been summarized by the board in *Ex parte Forman* [230 USPQ 546, 547 (Bd Pat App Int 1986)]. They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

The enablement issue relates to the intended purpose of detecting for the absence and/or presence of mutations in a virus, and the genus of compounds used to retrieve the virus.

Nature of the claimed invention:

The claims are directed to the use of a compound having the formula set forth below to bind to the US28 protein expressed on the surface of a cytomegalovirus (CMV) infected cell, isolating the complex, obtaining the genomic

data of the virus found in the infected cell, and detecting the presence and/or absence of mutations in the cytomegalovirus by genotypically analyzing a segment to of the virus found in the infected cell. However, the claims do not set forth the purpose achieved by detecting the presence and/or absence of mutations in the virus.



or is a pharmaceutically acceptable salt thereof; and wherein

the subscripts m and n are independently integers of from 0 to 3;

R^1 and R^2 are substituents independently selected from the group consisting of halogen, (C_1-C_4)alkyl, (C_1-C_4)alkoxy, (C_1-C_4)alkylthio, (C_1-C_4)haloalkyl, (C_1-C_4)haloalkoxy, nitro, cyano, (C_1-C_4)acyl, amino, (C_1-C_4)alkylamino, and di(C_1-C_4)alkylamino; and

R^3 is a substituent selected from the group consisting of (C_1-C_4)alkyl, (C_1-C_4)haloalkyl and (C_1-C_4)acyl.

Breadth of the claims:

The claims do not require the compound having the formula presented above to bind to US28 protein expressed on the surface of a CMV infected cell. In

the instant, the claims require the compound to bind to CMV and/or any part of a CMV infected cell.

The amount of direction or guidance presented:

The specification only teaches of compounds having the formula provided above binds to the US28 protein expressed on the surface of a CMV infected cell. Specifically, the specification teaches of two compounds, methiothepin and octoclothepin, that binds to the US28 protein expressed on the surface of a CMV infected cell. In all, the specification discloses of two compounds having the structural formula provided above as capable of binding to the US28 protein expressed on the surface of a CMV infected cell. The specification does not teach or provide any additional compounds, those having the structural formula as provided above, that binds to the US28 protein expressed on the surface of a CMV infected cell, CMV itself or other parts of a CMV infected cell.

Furthermore, the specification does not set forth any guidance relating the detection of mutations to a purposeful use. While it is noted that the specification indicates that the detection of mutations can be used to determine if the mutation confers resistance to a pharmaceutical agent. [Paragraph 14 of instant application's PreGrant publication.] However, there is no guidance or teachings in the specification relating a particular mutation to the determination of resistance to a pharmaceutical agent. The specification does not even set forth any guidance pertaining to which portion or segment of the CMV genome to focus on to determine if the mutation, if present, is of significance toward the determination of resistance to a pharmaceutical agent.

The presence or absence of working examples:

The specification does not contain any working examples.

The state of the prior art:

The use of compounds that binds to the US28 protein expressed on a CMV infected cell is not taught in the art prior to Applicant's filing of the claimed invention. The art does not teach of compounds having the structural requirement as set forth in the formula provided above to bind to CMV itself or other parts of a CMV infected cell—beside the US28 protein expressed thereon.

The predictability or unpredictability of the art:

The art acknowledges that CMV resistance studies have been limited by the difficulty and lack of standardization of antiviral susceptibility assays. [Conclusion section of Alejo Erice[1]] The art further acknowledges that genotypic screening methods can only detect mutants when the mutations reach 10% of the viral population in a clinical isolate. [Genotypic Methods of Alejo Erice]

Moreover, the art recognizes the need for further studies to fully characterize the genetics of resistance of CMV to different antiviral agents to determine their effect on the viral phenotype and to develop rapid and reliable methods for the timely detection of resistant CMV strains in clinical specimens. [First full paragraph, left column, page 287 of Alejo Erice]

In the instant, the specification does not set forth any guidance teaching the skilled artisan how to circumvent the difficulty and lack of standardization known for antiviral susceptibility assays, and the detection of mutants when it is less than

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[1] Alejo Erice. Resistance of human cytomegalovirus to antiviral drugs. Clinical Microbiology Reviews, April 1999, Vol. 12, No. 2, 286-297.

10% of the viral population. Nor has the specification set forth any guidance relating to the genetics of resistance of CMV to different antiviral agents to determine their effect on the viral phenotype. The specification has not provided a rapid and reliable method for the timely detection of resistant CMV strains in clinical specimens.

In summation, the specification failed to provide an enabling disclosure for the claimed invention.

A conclusion of lack of enablement means that, based on the evidence regarding each of the above factors, the specification at the time the application was filed, would not have taught one skilled in the art how to make and/or use the full scope of the claimed invention without undue experimentation. *In re Wright*, 999 F. 2d 1557, 1562, 27 USPQ 2d 1510, 1513 (Fed. Cir. 1993).

Conclusion

5. No claims are allowed.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emily Le whose telephone number is (571) 272 0903. The examiner can normally be reached on Monday - Friday, 8 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel can be reached on (571) 272-0902. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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